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ABSTRACT

Vocational course taking declined between 1982 and 1992, with especially large enrollment decreases occurring in general labor market preparation and consumer/homemaking education. Only a small proportion of 1992 high school graduates specialized in vocational education (VE). Among occupationally specific VE programs, business, and trade and industry had the highest enrollments. Special populations tended to participate more heavily in VE than did other high school graduates in 1992. A recent study established that vocational course taking and National Assessment of Educational Progress math scores have an unexplained inverse relationship. In 1991, public school vocational teachers served fewer students than did nonvocational teachers. In 1990, postsecondary vocational students accounted for approximately one-third of all undergraduates and one-half of all nonbaccalaureate students. At the postsecondary level, business was the most common major for vocational students, and community colleges had the largest vocational student enrollment. Vocational completers were more likely to be employers than were other individuals who do not participate in postsecondary education, and employment in fields related to postsecondary vocational completers' concentration was associated with higher earnings. Nonbaccalaureate students of low socioeconomic status (SES) were more likely to be vocational majors than were students with high SES. (Contains 13 figures/tables.) (MN)

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FINDINGS FROM VOCATIONAL EDUCATION IN THE UNITED STATES: THE EARLY 1990S

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The text in this booklet was written by Jim Houser of the Data Development and Longitudinal Studies Group of the National Center for Education Statistics (NCES). The findings presented here are excerpted from *Vocational Education in the United States: The Early 1990s*, which was prepared jointly by MPR Associates, Inc. and NCES. Barbara Kridl, Leslie Retallick, Don Eike, Andrea Livingston, and Karyn Madden edited and designed this text.

Findings from Vocational Education in the United States: The Early 1990s

Questions periodically arise about students' participation in vocational education at the secondary and postsecondary levels. This booklet is designed to answer such questions.

At the secondary level, this booklet provides information that addresses the following questions: Is participation in vocational education and different areas within vocational education increasing or decreasing? In what types of curricular areas are students most likely to specialize—vocational education, college preparatory, or neither? Do members of special populations, such as students with disabilities and students with limited English proficiency, participate in vocational education at the same rates as their counterparts? What is the relationship between academic test scores and participation in vocational education? Do vocational and nonvocational teachers serve similar numbers of students?

At the postsecondary level, this booklet provides information that addresses the following questions: What proportion of students major in vocational subjects? In what types of vocational subjects, such as business or health, do students most commonly major? What sectors of postsecondary education have the highest proportion of enrollees? What is the relationship between employment in a field related to a vocational completer's training and earnings? Are differences in race and socioeconomic status associated with different levels of participation in vocational education? What is the relationship between majoring in vocational education and the receipt of financial aid?

Secondary Vocational Education

Vocational Coursetaking 1982 and 1992

❖ **Vocational coursetaking declined over the past decade. The drop for both general labor market preparation and consumer and homemaking education was particularly large.**

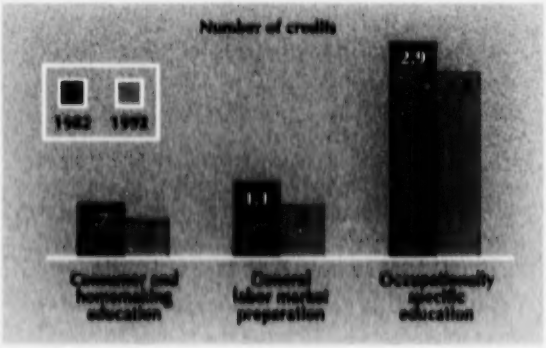
Occupationally specific courses make up just one of three types of vocational education. The other two are

- consumer and homemaking education courses, which are designed to prepare students for roles outside the paid labor market, such as child care and meal preparation, and

- general labor market preparation courses, which provide general employment skills that are not linked to a particular field, such as word processing skills and career education.

Figure 1 indicates that the average number of credits earned in occupationally specific coursework declined 14 percent from 1982 to 1992. During this period, the average number of credits in the other two areas of vocational education dropped more sharply (a 29 percent drop for consumer and homemaking education and a 36 percent drop for general labor market preparation).

Figure 1
Average number of vocational credits accumulated by public high school graduates, by type of vocational education: 1982 and 1992



SOURCE: U.S. Department of Education, National Center for Education Statistics, the High School and Beyond Sophomore Cohort 1982 High School Transcript Study, and the National Education Longitudinal Study, "Second Follow-up and High School Transcript Files," 1992.

COURSETAKING AT THE SECONDARY LEVEL

❖ **A small proportion of high school graduates specialize in vocational education.**

While almost all graduates completed at least one course in vocational education, a small proportion specialized in vocational education coursework in 1992. Vocational education is defined in this booklet as education below the bachelor's degree level that is directly related to a career. As figure 2 indicates, about 8 percent of public high school graduates specialized in vocational education. They are classified as specialists because they earned 4 or more credits[1] in a single occupa-

[1]In this publication, the term *credit* refers to a Carnegie unit, which is equivalent to a class that meets for one period a day for an entire school year.

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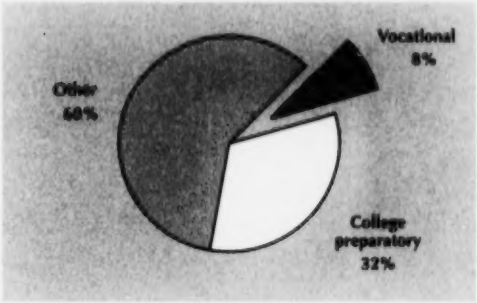
tionally specific program,[2] such as agriculture or business and office, and at least 2 of these credits were beyond the introductory level. The majority of graduates (60 percent) did not specialize in either vocational or college preparatory coursework.[3]

Figure 2
Percentage of 1992 public high school graduates, by area of specialization



SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study, "Second Follow-Up and High School Transcript Files," 1992.

Occupationally Specific Programs

❖ **Among occupationally specific programs, high school graduates are most likely to have completed a course in business and to have concentrated in trade and industry.**

The rate at which graduates participated in occupationally specific programs varied by program for 1992 high school graduates when participation was measured by either of the following:

[2]Sometimes the term *specific labor market preparation* is used to describe these programs. Occupationally specific education consists of courses that teach skills and provide information required in a particular vocation.

[3]College preparatory specialists earned 4 or more credits in English; 3 or more credits in math, with 1 of those units in algebra or higher; 3 or more credits in science, with 1 or more in chemistry or physics; and 2 or more credits in a single foreign language.

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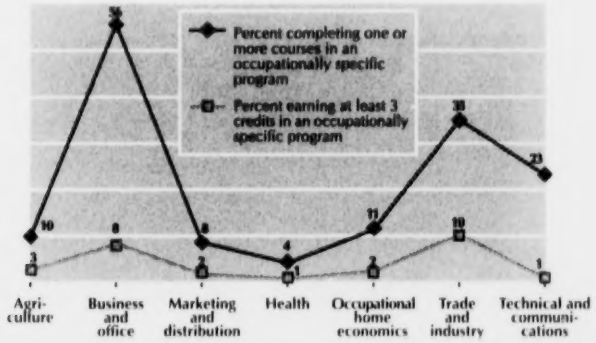
- the percentage of graduates completing at least one course in an occupationally specific program, or
- the percentage of graduates concentrating in a vocational program.

A graduate concentrates in an occupational program by earning 3 or more credits in an occupationally specific program.[4]

Figure 3 indicates that the highest percentage of graduates completed at least one course in business, followed by trade and industry, and then technical and communications. The pattern for concentrators differed from that for students who complete just one course. The trade and industry programs, which had nearly one-half of all concentrators, represented the most common concentration for 1992 graduates, while health and technical and communications were the least common areas of concentration.

Figure 3
Percentage of 1992 public high school graduates 1) completing one or more courses in an occupationally specific program, and 2) earning 3 or more credits in an occupationally specific program, by program area



SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study, "Second Follow-Up and High School Transcript Files," 1992.

[4]A "concentrator" should not be confused with a "specialist." A student becomes a specialist in an occupational area by earning 4 or more credits in an occupational program with at least 2 of those credits being beyond the introductory level.

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Participation of Special Populations in Vocational Education

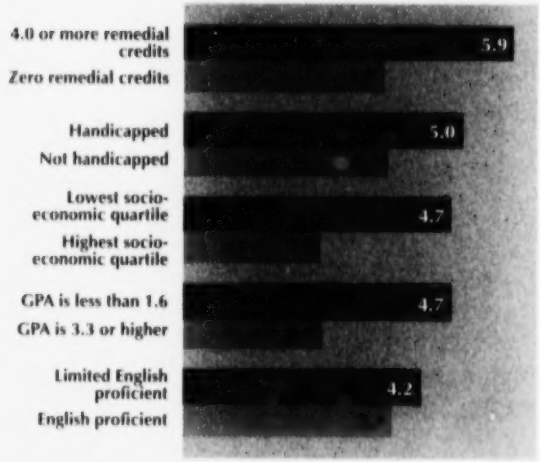
❖ **Special populations tend to participate heavily in vocational education.**

Members of special populations tended to participate more heavily in vocational education than other 1992 high school graduates. Graduates earning a higher average number of credits in vocational education than their counterparts were those who

- earned a relatively large number of credits in remedial courses,
- had a disability,
- were from a family with relatively low socioeconomic status (SES), and
- had a relatively low grade point average.

Graduates with limited English proficiency, however, were an exception to this pattern: they earned about the same number of credits in vocational education as English proficient graduates (figure 4).

Figure 4
Average number of credits accumulated by 1992 public high school graduates in vocational education, by special population status



SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study, "Second Follow-up and High School Transcript Files," 1992.

MATHEMATICS ACHIEVEMENT

❖ **Vocational coursetaking and NAEP math scores have an inverse relationship, the cause of which is unclear.**

A recent study indicated that the number of credits earned in vocational education had an inverse relationship with mathematics achievement, as measured by the National Assessment of Educational Progress (NAEP).[5] As figures 5a and 5b demonstrate,

[5]Alexander C. McCormick , John Tuma, and James Houser, *Vocational Coursetaking and Academic Achievement: An Analysis of High School Transcripts and 1990 NAEP Assessment Scores* (Washington, D.C.: U.S. Department of Education, National Center for Education Statistics, May 1995).

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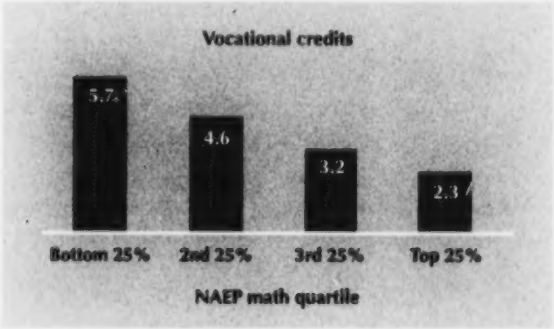
1990 public high school graduates in the higher test quartiles earned fewer vocational credits and more academic credits than those graduates in the lower test quartiles. The study mentioned above also found that as the number of vocational credits graduates accumulated rose, their NAEP mathematics scores tended to decrease.

The study cautioned against assuming a causal relationship between vocational coursetaking and lower mathematics achievement based on these findings. Because the study examined achievement at a single point in time, it was unable to isolate students' prior ability or achievement and, therefore, to control for preexisting differences—or "selection effects"—between students who earned greater and fewer numbers of vocational credits. A related study found that while certain academic courses contributed to cognitive gain, vocational courses generally had a neutral effect on cognitive growth.[6]

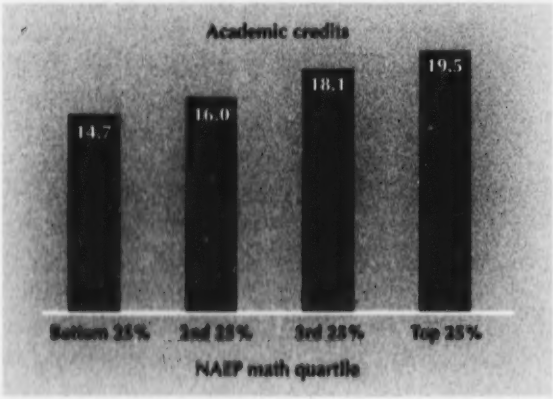
Figure 5a
Average number of credits earned by public high school graduates in vocational courses, by NAEP mathematics assessment quartiles: 1990



SOURCE: U.S. Department of Education, National Center for Education Statistics, National Assessment of Educational Progress, 1990 High School Transcript Study and 1990 National Assessment of Educational Progress 12th-Grade Assessment File.

[6]K.A. Rasinski, *The Effect of High School Vocational Education on Academic Achievement Gain and High School Persistence: Evidence from NELS:88*, Draft Report (Chicago: National Opinion Research Center, 1994).

Figure 5b
Average number of credits earned by public high school graduates in academic courses, by NAEP mathematics assessment quartiles: 1990



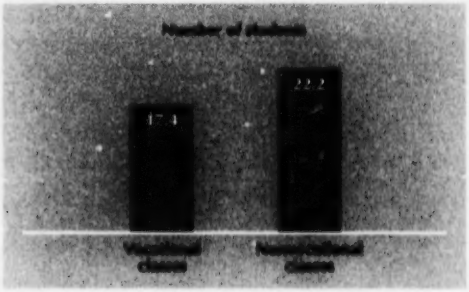
SOURCE: U.S. Department of Education, National Center for Education Statistics, National Assessment of Educational Progress, 1990 High School Transcript Study and 1990 National Assessment of Educational Progress 12th-Grade Assessment File.

Size of Vocational Classes and Teaching Loads

❖ **Public school vocational teachers serve fewer students than do nonvocational teachers.**

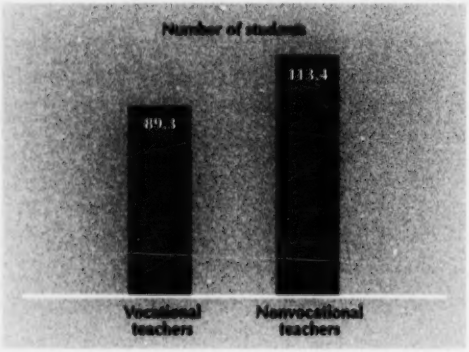
Public school teachers in 1991 reported having smaller vocational classes than nonvocational classes (figure 6a, 17 students per class compared to 22 students per class). In addition, figure 6b indicates that vocational teachers reported instructing fewer students per week (89) than nonvocational teachers (113).

Figure 6a
Average size of vocational and nonvocational public school classes in grades 9 through 12: 1990–91



SOURCE: U.S. Department of Education, National Center for Education Statistics, 1990–91 Schools and Staffing Survey.

Figure 6b
Average number of students instructed per week by vocational and nonvocational public school teachers of grades 9 through 12: 1990–91



SOURCE: U.S. Department of Education, National Center for Education Statistics, 1990–91 Schools and Staffing Survey.

Postsecondary Vocational Education

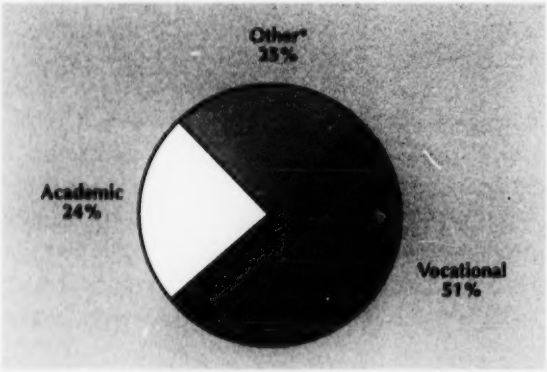
Participation in Postsecondary Vocational Education

- **Postsecondary vocational students compose approximately one-third of all undergraduates and one-half of all nonbaccalaureate students.**

A postsecondary vocational education student is a student who is majoring in an occupational program, such as business or health, below the baccalaureate level. According to the National Assessment of Vocational Education, approximately 5.8 million students were enrolled in postsecondary vocational education in 1990. These vocational students represented 35 percent of all students enrolled in undergraduate postsecondary education.

Among *nonbaccalaureate* students, about one-half reported majoring in a vocational program (figure 7). This proportion contrasts with about one-quarter reporting an academic major and the other quarter taking personal or avocational courses, such as basic skills and citizenship activities.

Figure 7
Percentage of nonbaccalaureate students attending postsecondary institutions, by program major: 1989–90



*Other covers personal or avocational courses, such as basic skills, citizenship activities, health-related knowledge and skills, interpersonal and social skills, leisure and recreational activities, and personal awareness and self-improvement.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1990 National Postsecondary Student Aid Study.

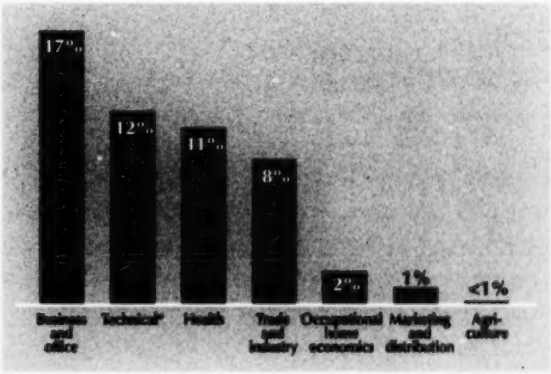
PROGRAMS

❖ **Business is the most common major for vocational students.**

Postsecondary nonbaccalaureate students in 1989–90 majored in various vocational programs. As figure 8 indicates, the most common vocational major was business and office (17 percent), followed by health (11 percent) and trade and industry (8 percent).[7] The category of technical fields, in which 12 percent of nonbaccalaureate students majored, represents a conglomeration of fields (computers, data processing, engineering, science technologies, protective services, and communication technologies).

[7]Students report majoring in health and trade and industry at similar rates.

Figure 8
Percentage of nonbaccalaureate postsecondary students majoring in vocational fields, by program area: 1989–90



*Technical combines computers/data processing, engineering/science technologies, protective services, and communications technologies program areas.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1990 National Postsecondary Student Aid Study.

INSTITUTIONS

❖ **Community colleges have the largest enrollment of vocational students.**

As figure 9 reveals, vocational majors tend to be enrolled in certain types of postsecondary institutions. Community colleges (public 2- to 3-year institutions) had the highest number of enrollees in vocational education in 1989–90, with 60 percent of all vocational education majors attending these institutions. Private proprietary institutions, with more than one in five vocational majors, were the second most likely type of institution to enroll vocational students.

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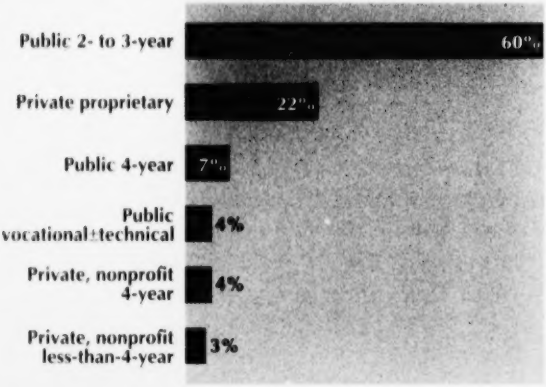
Figure 9
Percentage of nonbaccalaureate vocational majors attending different types of postsecondary institutions: 1989–90



SOURCE: U.S. Department of Education, National Center for Education Statistics, 1990 National Postsecondary Student Aid Study.

POSTSECONDARY EMPLOYMENT OUTCOMES

❖ **Vocational completers are more likely to be employed than individuals who do not participate in postsecondary education.**

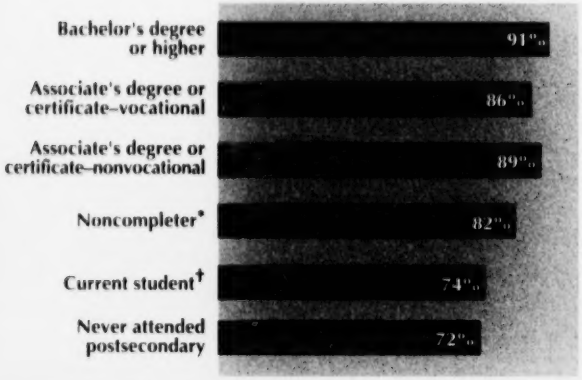
As figure 10 indicates, completion of a postsecondary vocational associate's degree or certificate is associated with some positive employment outcomes for individuals aged 18–34. In 1990, vocational completers (86 percent) were more likely than individuals who had never participated in postsecondary education to be em-

ployed (72 percent). Vocational completers were employed at a similar rate as

- individuals who participated in postsecondary education, but did not earn a degree or certificate (82 percent), and
- nonvocational associate's degree or certificate holders (89 percent).

Vocational completers were less likely to be employed than bachelor's degree recipients (91 percent).

Figure 10
Percentage of U.S. population aged 18–34 who were employed, by postsecondary completion status and type of award: Summer 1990



*An individual who participated in postsecondary education and left without completing.
†An individual who is currently a postsecondary student who might have previously attained a postsecondary degree or certificate.

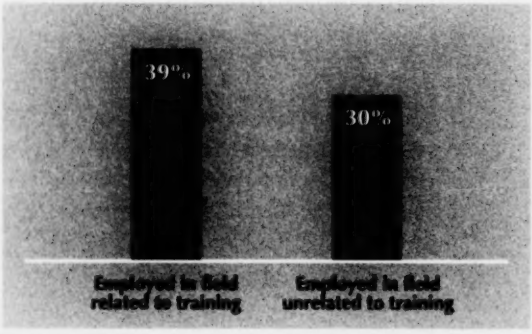
SOURCE: U.S. Department of Commerce, Bureau of the Census, Survey of Income and Program Participation, 1990 Panel.

Postsecondary Earnings Outcomes

❖ **Employment in a field related to a postsecondary vocational completer's concentration is associated with higher earnings.**

In 1990, approximately one-half of employed vocational completers aged 18–34 held jobs in a field related to their training. As figure 11 shows, those vocational completers who were employed in a field related to their training were more likely to earn above $2,000 a month than those vocational completers who were not employed in such a field. While 30 percent of postsecondary vocational completers employed in a field unrelated to their training earned more than $2,000 a month, 39 percent of those completers employed in a field related to their training did so.

Figure 11
Percentage of employed postsecondary vocational completers aged 18–34 earning more than $2,000 a month, by relatedness of employment to training: Summer 1990



SOURCE: U.S. Department of Commerce, Bureau of the Census, Survey of Income and Program Participation, 1990 Panel.

CHARACTERISTICS OF STUDENTS

❖ **Nonbaccalaureate students with low SES are more likely to be vocational majors than students with high SES.**

Among undergraduate nonbaccalaureate students in 1989–90, students' participation in vocational education varied by

- family background, and
- race and ethnicity.

As indicated in table 1, vocational majors were more likely to be from a relatively poor family. Nonbaccalaureate students from families in the lower two socioeconomic quartiles reported majoring in vocational education at higher rates than those in the upper two quartiles.

Black nonbaccalaureate students were also more likely to report majoring in a vocational program than other students. While nearly two-thirds of these black students reported majoring in vocational programs, about one-half of all students reported vocational majors.

Table 1
Percentage of nonbaccalaureate students attending postsecondary institutions enrolled in vocational programs, by race–ethnicity and SES: 1989–90

Student characteristics	
Total	51.2
Race–ethnicity	
White	49.2
Black	64.8
Hispanic	52.6
Asian	48.0
Native American	46.8
Family background*—dependent students	
Lowest quartile	54.7
Second quartile	51.4
Third quartile	41.7
Highest quartile	35.5
Family background*—independent students	
Lowest quartile	56.1
Second quartile	54.2
Third quartile	47.8
Highest quartile	45.1

*Family background is a composite variable created from data on family income (for dependent students only); father's and mother's education levels; and father's and mother's occupations, which were assigned values from the Duncan socioeconomic index (SEI) indicating the social value of occupations.

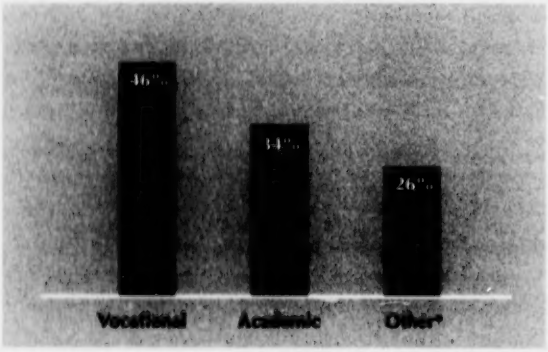
SOURCE: U.S. Department of Education, National Center for Education Statistics, 1990 National Postsecondary Student Aid Study.

STUDENT FINANCIAL AID

❖ **Vocational students are more likely to participate in financial aid programs in general, and federal financial aid in particular, than are other students.**

Among 1989–90 nonbaccalaureate undergraduate students, vocational majors tended to participate more heavily in financial aid programs than other students. As figure 12a indicates, students majoring in vocational education (46 percent) were more likely to receive some sort of financial aid than either academic majors (34 percent) or students reporting other majors (26 percent). Among students receiving some sort of financial aid, nearly three-quarters of vocational majors received federal financial aid compared to two-thirds of those academic majors who received such aid (figure 12b).

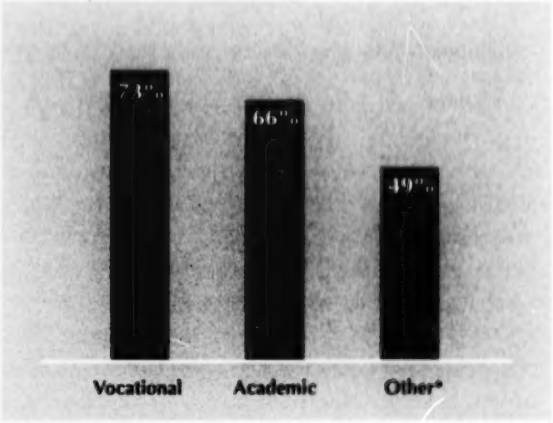
Figure 12a
Percentage of nonbaccalaureate students attending postsecondary institutions who received financial aid, by type of program: 1989–90



*Other includes personal or avocational courses, such as basic skills, citizenship activities, health-related knowledge and skills, interpersonal and social skills, leisure and recreational activities, and personal awareness and self-improvement.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1990 National Postsecondary Student Aid Study.

Figure 12b
Percentage of aided nonbaccalaureate students receiving federal aid, by type of program: 1989–90



*Other includes personal or avocational courses, such as basic skills, citizenship activities, health-related knowledge and skills, interpersonal and social skills, leisure and recreational activities, and personal awareness and self-improvement.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1990 National Postsecondary Student Aid Study.

Vocational majors who received federal aid received on average nearly $3,000 of such aid in 1989–90. Vocational majors were more likely to receive federal grants (54 percent, the largest source being Pell grants) than federal loans (43 percent, the largest source being Stafford loans).[8] Table 2 indicates that the average Stafford loan awarded to vocational majors (about $2,300) was larger than the average Pell grant (about $1,400).

[8]Karen Levesque et al., *Vocational Education in the United States: The Early 1990s* (Washington, D.C.: U.S. Department of Education, National Center for Education Statistics, November 1995).

Table 2
Average amount* awarded to nonbaccalaureate students who received federal financial aid, by type of federal aid and program: 1989–90

Program type	Total federal aid	Pell grant	Stafford loan
Academic	$2,635	$1,308	$2,267
Vocational	2,960	1,405	2,281
Other	2,235	1,293	2,091

*The average amounts are for those receiving that type of aid.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1990 National Postsecondary Student Aid Study.

Bibliography

Levesque, Karen; Premo, Mark; Vergun, Robert; Emanuel, David; Klein, Steven; Henke, Robin; Kagehiro, Susan; and Houser, James. *Vocational Education in the United States: The Early 1990s*. Washington, D.C.: U.S. Department of Education, National Center for Education Statistics. November 1995.

McCormick, Alexander C.; Tuma, John; and Houser, James. *Vocational Coursetaking and Achievement: An Analysis of High School Transcripts and 1990 NAEP Assessment Scores*. Washington, D.C.: U.S. Department of Education, National Center for Education Statistics. May 1995.

National Assessment of Vocational Education. *Final Report to Congress. Volume II*. Washington, D.C.: U.S. Department of Education, Office of Educational Research and Improvement, Office of Research. 1994.

Rasinski, K.A. *The Effect of High School Vocational Education on Academic Achievement Gain and High School Persistence: Evidence from NELS:88*. Draft report. Chicago: National Opinion Research Center. 1994.

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